Quarkonium TG Plans

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Upsilon Analysis

- The observable we plan to measure Y(1S), Y(2S), Y(3S) R_{AA} as a function of collision centrality and Y p_T.
- Performance plots shown in the past were for 0-10% most Central Au-Au collisions since in those events the measurement is more challenging.
- Figures of merit are:
  - Mass resolution to separate Y(1S), Y(2S), Y(3S)
    - Depends on momentum resolution
  - Signal statistical precision that translates directly into Y(1S), Y(2S), Y(3S) R_{AA}
    - Depends on tracking efficiency
    - PID efficiency
    - Combinatorial Background

Tracking issues

Lots of people working on tracking issues with TPC +MAPS design : Tony Mike Carlos Sourav Veronika etc

- Determine mass resolution and tracking efficiency with realistic geometry in Central Au+Au events.
  - tracking efficiency and pileup issues
  - intermediate tracker mass: do we need one or more? It is needed for pattern recognition but it affects momentum resolution
  - fake track rates (with TPC might not be issue)

Background Issues

- Framework for background estimate exists, it needs momentum/eta dependent pion rejection factors(so far assumed a constant rejection factor)
- As long as pion rejection is better than 150 background are dominated by semileptonic decays of charm and bottom
- Determine electron PID efficiency and pion rejection factors with realistic clustering and detector configuration in central Au-Au collisions (Jin, Marzia, Brandon, Tommy +others…)
  - Given occupancy in central events, we need better clustering algorithm and cluster fitting
  - We might want to start with track projection for Upsilon